

DOCUMENTATION ON LONGEVITY OF
GOODYERA PUBESCENS LEAVES AND UPDATE ON
TRIPHORA TRIANTHOPHORA IN NEW HAMPSHIRE

PHILIP E. KEENAN

ABSTRACT

Observations on the longevity of *Goodyera pubescens* evergreen leaves are reported, as are continuing observations of the ecology of *Triphora trianthophora*.

Key Words: *Goodyera pubescens*, *Triphora trianthophora*, ecology, New Hampshire

To my knowledge, no one has ever bothered to find out how long the leaves of *Goodyera pubescens* (Willd) R. Br. remain evergreen in the wild. After years of good intentions, I finally marked two leaves in the summer of 1985, making sure I was tagging the newly emerged leaf of that season. The colony on which I chose to do this experiment was one of the largest and healthiest I have ever found, consisting of approximately one hundred plants, all in prime condition. In this particular station the creeping rhizomes are partially exposed on the surface of the ground, making it easy to distinguish the separate rosettes and growing tips. One clump grows entirely exposed on the surface of a rock outcropping. After the tiny emerging leaf had made sufficient growth early that summer, I tied a strip of plastic made from a plastic "baggie" to the base of the leaf. Each year thereafter I checked the two specimens. In the three succeeding years of 1986, 1987, and 1988, each tagged leaf was in excellent condition. In 1989 I checked each leaf in May, finding them still green and in good condition but less than the perfect condition of the previous years. On July 7, each leaf had succumbed; that is, it was browned and decomposing. From mid-1985 to mid-1989 is four years; I therefore conclude that the life of a leaf of *Goodyera pubescens* in this colony was exactly four years. Currently, I am tagging *Goodyera tessellata* in a like manner.

My continuing observations on *Triphora trianthophora* (Sw.) Rydb., first reported on in 1986 (Keenan, 1986), have produced some further interesting facts. The original station under observation is the classic Algonquin site of Morris and Eames (1929), found in the nineteen-twenties. I have had this station under observation since 1974, and have missed checking the site only

three or four years during the period. It has not changed at all in those sixteen years, and from their description most probably hasn't changed since Morris and Eames's day. The second station I discovered myself, in 1985, about one mile from the original site, making 1989 the fifth straight year of observation there.

The two successive years of 1986 and 1987 were extraordinary years in terms of population numbers at both of these Holderness, N.H., sites, with 1987 a bit better than 1986. For example, there were well over 5000 plants in an area measuring 100 feet wide by 1250 feet long in 1987; in 1986, the clumps ranged in size from approximately a half dozen to well over 300 plants. This extraordinary production of blooming plants resulted in some exceptional specimens. One plant had a double flower! Another plant, the most vigorous I've ever seen, had a very thick stem branching into two smaller ones, each of which had four buds, for a total of eight buds on a single plant. The usual maximum complement is six buds. I have photographic documentation of this monstrosity. In 1987, I found my first "albinos" of *Triphora*: cream-white leaves and ovary/fruit, with pale lavender stems.

Several plants were 12" (30 cm) in height from above-leaf surface, taller than usual. Most of the plants were in the 4"–8" (10–20 cm) height range; even the smallest plants at 2" (5 cm) had one or two buds. In one representative population sample of approximately 110 plants growing typically bunched together, the breakdown in bud totals was as follows: 30 plants with one bud, 75 plants with two buds, and 5 plants with three buds. Four-bud plants occur occasionally, while those with five and six buds are exceptional.

In 1988, the population explosion of the two previous years ceased abruptly, with more "normal" numbers prevailing. The smaller numbers continued in 1989, the plants numbering in hundreds instead of in thousands.

In 1989, there were several consecutive "colder" nights. August 7, 8, and 9, were all "colder than normal." On the 7th, following four straight days of high heat and humidity, a cold front went through early in the evening, dropping the temperature into the forties. *Triphora* bloomed on the 9th (a major flowering), 11th (just a few), and 12th (a big day but not as big as the 9th). On the 10th, most of the flowers that had opened on the 9th retained more color and freshness than is usual the day after, perhaps because of the colder temperatures. Normally, the flower on the

day after is clearly "wilted" in appearance. Ninety-nine percent of blooming plants on August 12 had but a single flower open. On this day, *Triphora* was blooming in the rain. Interestingly, on many plants, the light showers knocked off a lateral sepal, either the right one or the left, and sometimes the dorsal sepal as well. I also have photographs of this condition.

Though the literature stresses the habitat for *Triphora* to be deep pockets of accumulated beech leaves (Brackley, 1985; Case, 1987; Luer, 1975), my experience has shown some plants actually growing close to the road (within inches of the hottop) in superficial mineral soil, such as fine gravel deposited there by winter road sanding and/or bituminous resurfacing in the summer. Close examination, however, shows decomposing leaves beneath the thin veneer of gravel. Apparently it does not grow in predominantly mineral soil.

The favored growing site for these plants is alongside fallen decomposing tree trunks and logs of beech, but never on top of these logs, except when the log has decomposed almost completely into soft "soil" humus. The beech leaf depressions are second in preference, at least at these two stations. *Triphora* apparently does not do well with competition; wherever there is much herbaceous or sapling growth on the beech forest floor, this orchid tends to significantly decrease in numbers or be entirely absent. Only *Epifagus virginiana* (L.) Bart. is a common herbaceous companion plant here, with a few hemlock seedlings in very scattered clumps.

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31 HILLCREST DR.
DOVER, NH 03820